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PROBLEMS OF USSR METALLURGICAL INDUSTRY PLANNING

[The periodical Gornyy Zhurnal (Mining Journal) has initiated a discussion on its pages of the problems related to the planning of metallurgical industry enterprises. The article below by Mine Director V. A. Kulibin is prefaced by an introductory note by the editor.]

EDITOR URGES DISCUSSION, CRITICISM

The rising volume of capital construction places increased demands on planning organizations, requiring them to plan enterprises more rapidly, to develop carefully the basic problems in the plan, to eliminate excesses in capital expenditures, and to introduce more extensively the best achievements of science and technology.

Kulibin's article makes a timely analysis of the shortcomings of the work of planning organizations of the metallurgical industry. Superfluities are found in many plans. The plans are not always based on sound data, they do not make sufficient use of the new developments in technology nor the achievements of Stakhanovites, the time limit for the plan is often violated, and the planning documents are poorly drawn up. Planning institutes do not make sufficient use of prior planning experience, and standardization in planning is not used sufficiently. Soviet industry cannot put up with shortcomings in planning which result in nonproductive expenditure of state funds and delays in the development of industry. The time has come to use comprehensive criticism as a means of guiding planning organizations in drawing up plans of consistently high quality.

In opening this discussion, the editors call upon workers in planning institutes, construction projects, enterprises, and scientific-research institutes to take active part in the discussion of problems posed in Kulibin's article and to aid in the uncovering and elimination of planning deficiencies by concrete proposals and effective criticism.

KULIBIN CITES PLANNING DEFICIENCIES

At present, the metallurgical industry has at its disposal dozens of first-class planning organizations staffed with experienced and highly qualified planning specialists. Despite the achievements made in the planning of industrial enterprises, it would be incorrect to state that perfection has already been attained in the planning field. There are many shortcomings in the organization of planning and in the improvement of its quality.

The decree on decreasing construction costs and converting planning organizations to operation on a budget means not only that planners must improve the quality of planning, that is, must guide their decisions by what is most technically accurate and must decrease construction and reconstruction costs, but it is also an indication of such grave shortcomings in planning as the presence of inexcusable superfluities and erroneous technical decisions.

An examination of plans has shown that a close analysis of planning decisions can often reduce the capital investments necessary for construction by 15-20 percent without harm and often even with advantages, and can bring to light the simplest and most suitable technical decisions on the organization of production processes.

The results of an examination of the plans of a number of planning organizations shows that at present there are still cases of insufficient foresight in making decisions, of superfluities in the plans, of excessive construction costs, and of unwarranted technological requirements (from data collected by engineers N. I. Yakovlev, S. N. Zubarev, A. I. Batanov, M. P. Yudintsev, and V. A. Kulibin).

An example of the incompleteness and poor quality of surveying work is the case of the plan for the Sheregeshevskiy Mine drawn up by "Kuzbassproyektruda" (Kuzbass Mine Planning; director, G. Ya. Salenko). This mine was planned on the basis of available prospecting data. While the plan was being made, additional data on large, deep-lying ore bodies, which had not been studied, was received. As a result, it was necessary to make radical revisions in that part of the plan pertaining to underground operations.

The preliminary research work of "Mekhanobr" (Scientific Research Institute for Machine Processing of Minerals; director, D. S. Neustroyev) on the Magnitogorsk Mine did not contain a sufficient study of all the peculiarities entailed in washing the extremely clayey, sticky alluvial ores. As a result, the washing plants built from this plan were not sufficiently effective in washing the ore, even though in productivity, these plants completely satisfied the demands of the mine.

A sinter combine, built at Bakal from a "Mekhanobr" plan, seemed to present no difficulties as to processing the ore. However, the first few months of operation showed that the planners had not studied the specific properties of the Bakal ores. The ore would not move even in a perpendicular stream, but rather had to be pushed through the intermediate bunkers by shovels. This naturally led to a sharp increase in the staff of workers to man the shovels. The productivity of the plant was sharply reduced in comparison with the plan. An analogous situation occurred at the plant for concentration of the sulfide ores of the Magnitnaya Gora Mine.

These examples show that the planning organizations are not entirely responsible for shortcomings in planning work. Intermediate organizations -- the research and prospecting agencies -- are also at fault, since planning decisions are made on the basis of prospecting and surveying work and the quality of these decisions depends to a large extent on the thoroughness of the available data.

However, it should be noted that even when they have sufficiently complete data, the planning organizations do not always arrive at the most accurate and economically sound decisions.

An example of this is the development of one of the sectors of the Lipetsk iron-ore deposit. For this sector, "Yuzhgiproruda" /State Scientific Research Institute for Planning Southern Mining Enterprises?/ (director, I. Ya. Grishuk) with the approval of "Glavruda" /Main Administration of Metallic Ores?/ (chief, S. N. Meleshkin) proposed a plan providing for the mining of the ore by four inclined shafts, with the establishment in these shafts of independent areas having all surface installations and with the construction of a central work area servicing all four industrial areas in the shafts.

When the plan was reviewed in the Ministry of the Metallurgical Industry, it was found possible to limit the construction to only two inclined shafts with an outlet to only one industrial area. The central area was also ruled out. This helped to cut the size of the capital investment by more than 15 million rubles and to decrease the staff of exploitation workers.

In planning quarries of the Karakubskoye, Yelenovka, and Studenovskoye mine administrations, the institute decided on a bench height which was too high and which in practice resulted in poor quality in crushing of the limestone and low productivity of the excavators.

In solving the problem of transporting the finished sinter from the sinter plant to the loading bunkers in the port of one of the combines it was planning. "Yuzhgiproruda" presented five or six variants and recommended as the least expensive variant the construction of a special harbor (kovsh-port) so that the sinter could be loaded directly onto the ocean vessels. However, expert opinion showed that the construction of such a harbor with a feed canal would not eliminate the necessity of building special breakwaters protecting the entry of the canal. The plan did not take this into consideration. Construction of the breakwaters would necessitate a 35-million-ruble increase in capital expenditures and would eliminate any advantage this variant might have had.

Of the proposed plans, the mine administration approved the variant which called for a rigid telpher system and a spare warehouse at the plant equipped with bridge transshipping installations. However, even in this variant, a serious miscalculation was permitted in the weight of the necessary metal structures (reduced five or six times). When the ministry reviewed the plan, both variants were discarded and the variant employing railroad transport was adopted.

In planning one of the Siberian iron deposits, "Kuzbassproyektruda" proposed that mining be done only by underground methods. When the plan was discussed in detail within the ministry, it was decided to work a substantial part of the deposit by open methods, using dump trucks for haulage of the ore to a crushing and concentrating plant.

In planning a concentration-sinter plant in Siberia, "Kuzbassproyektruda" was not able to reach a solution which would guarantee that the area would not be inundated by the river when at its maximum level. Detailed hydrotechnical and hydrogeological expert opinion, however, showed that it was possible to build the plant at a site lower than the highest water level of the river by employing levees and drainage canals and by pumping the water from the canals back into the river. These and other changes in the original plan helped to reduce the volume of excavation work in building the plant by more than 500,000 cubic meters.

A number of problems in planning sinter plants have not yet found accurate and standard solutions. One of these problems is the cooling of the sinter. "Mekhanobr," which heads the planning of sinter plants, has not yet decided on a strict rule governing the cooling of sinter which would provide for the least impairment of its

quality. In each new plan, "Mekhanobr" either gives a new and untried variant for cooling sinter or completely avoids the problem. The latter situation occurred in the planning of the Serov Sinter Plant which was carried out by "Uralmekhanobr" (director, I. Ya. Bruk). And yet, 2 years ago, "Mekhanobr" was ordered by the ministry to conduct experiments and establish an optimum method of cooling sinter.

In expanding one of the operating plants, it was found necessary to obtain three types of sinter on two sinter conveyer lines. It would have been logical to have obtained one type (common grade) on one machine and two types on the second. However, "Uralmekhanobr" planned to obtain one type of sinter on one machine and three types on the second. This was all the more illogical in that the common grade of sinter is obtained from a charge composed of many materials of various sizes, ranging from 0-15 to 0-0.2 millimeters. With this organization of work, that is, sintering only large-size material on one machine and only small-size material on the other, the productivity of the machine in the second line was reduced. In addition, the common-grade sinter was not of uniform quality.

Another shortcoming which should be considered is the complete failure to study either the methods of obtaining or the properties of a self-fluxing sinter. Some of "Mekhanobr" plans call for the crushing of limestone to 3 millimeters and others call for crushing it to one millimeter. The degree of basicity of the sinter used in the plans does not always correspond to the conditions under which the sinter is to be utilized. Thus, for the sinter plant at the Kursk Magnetic Anomaly, "Mekhanobr" planned the production of a sinter with a degree of basicity equal to one. The plant is located away from the metallurgical plant, and the time lapse between the production of the sinter and its consumption is not less than 7-10 days. At the same time, it is well known that the permissible time for the storage of sinter of this basicity does not exceed 2-3 days.

A concerted effort must also be made to avoid such instances as when a higher approving authority makes an illogical decision, despite the fact that the correct decision has already been made by the planning organization. An example of this is the plan for the second crushing plant of the Zlatoust Mine Administration, which was drawn up, at the insistence of the higher approving authority (in this case, "Glavruda"), by "Mekhanobr" without any correlation with the first crushing plant.

The apathy of some planning organizations in choosing systems of operation and equipment should be noted. "Giprotsvetmet" (State Institute for Planning Nonferrous Metallurgy Enterprises; chief engineer, N. S. Sindarovskiy), in planning one lead-zinc deposit, decided on the underground method of mining the ore, while the conditions of the deposit were such that half of the ore reserves could be mined by open-pit methods. The use of the open-pit method makes for a more rapid achievement of the planned capacity of the enterprise and also improves working conditions for the miners. Similar hasty decisions have been observed from this institute in the matter of complex mechanization of mining operations. In planning one of the plants for concentrating manganese ore, "Mekhanobr" insisted on the use of serrated rollers in the first and second crushing stage, while in practice, the replacement of these crushing rollers by cone-shaped crushers has completely proved itself.

Not all planning organizations have a sufficiently serious and responsible attitude toward the reconsideration of previous plans. Thus, for one sinter plant, the plan of which was completed 9 May, "Mekhanobr" estimated the capital investment for one sinter line at a figure 35 percent above the corresponding capital investment for an analogous plant, the plan of which had been completed 2 years prior.

Technical and working plans are not always correlated with the standard equipment produced by supply plants. Planning organizations also fail to give sufficient attention to the introduction of new equipment and to the need for standard decisions in drawing up plans. "Mekhanobr," which has at its disposal a sector for designing concentration equipment, does not exert sufficient effort toward the adoption of this equipment in production. More than 2 years have passed since the development of dehydrating tables, but the Zlatoust plant still does not practice dehyration of concentrates because the tables, produced according to the "Mekhanobr" design, cannot be tested due to the lack of a design for the machine parts.

The magnetic separators and jigging machines produced according to "Mekhanobr" plans are not designed for the heavy work of processing iron ores. In the opinion of production experts, these machines are ineffective and unreliable. The same is true of the troughs, the dumping cars, and other auxiliary equipment produced by plants of allied ministries.

Highly productive equipment developed by "Mekhanobr" such as stator flotation machines, band magnetic separators for highly magnetic ore, precipitation centrifuges, etc., have not been widely put into production because the planning organization has not been persistent enough in its efforts to introduce these new machines. The machine designers, furthermore, do not test the performance of the equipment built by them in industrial plants and make no attempts to modernize this equipment.

The standard decision is not sufficiently employed in planning. An analysis of "Mekhanobr" plans, for example, shows that they often include varied decisions for one and the same problem. These decisions are based on only one scheme in principle, and are merely variants of it.

The planners do not give sufficient attention to the work of Stakhanovites and production innovators. In plans for mining operations, many calculations are still based on old production norms and on norms for equipment productivity which have long since been exceeded by leading workers of the enterprise. The plans for concentration plants often do not take into consideration the methods for increasing plant equipment productivity which have been tried and tested in production.

Of tremendous importance in planning is the drawing up of the estimate papers. When the graphic part of the planning documents is at a sufficiently high level, then the text of the documents often leaves much to be desired. Supplementary notes to the plans are often filled with mistakes and discrepancies, even though the plan looks good from the exterior. This is particularly true of the "Mekhanobr" Institute's plans, the inner expert opinion of which is purely formal in nature.

The carelessness in the organization of planning work is made apparent in the violation of the time limits for completion of plans of mining and concentration enterprises. For example, the working drafts for a group of southern sinter plants should have been completed by "Mekhanobr" by 1 January 1950 according to the schedule approved by the ministry. Actually, these drafts were not completed even by the end of 1950. "Mekhanobr" was 7 months late in presenting the plans for the Tula Concentration and Sinter Plant.

The above-mentioned shortcomings in planning are the result primarily of a lack of criticism of planning work. The lack of a wide exchange of opinions based on criticism and self-criticism has resulted in a situation where planning organizations present several decisions on the same technical problem often without considering the experience of allied planning organizations and enterprises. The problem of the practice of planning metallurgical industry enterprises must be widely discussed. The USSR proposes to build many mining enterprises, the plans for which must be technically up to date and economically sound.

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